and there is, in addition, a yellow matter. After comparing his results with those obtained by Heeren, by an examination of the products evolved by his erythrine in contact with air and with ammonia, and stating reasons for some changes in nomenclature, the author gives the chemical formulæ resulting from his own analysis of these different substances.

His inquiries into the constitution of ordinary litmus, which form the last division of his subject, lead him to the conclusion that that substance contains the principles designated by him as Erythrolein, Erythrolitmine, Azolitmine, and Spaniolitmine; and that the colouring constituents of litmus are, in their natural condition, red; the blue substances being produced by combination with a base, which bases in that of commerce are lime, potass, and ammonia; and there is mixed up in the mass a considerable quantity of chalk and sand. The details of the analyses of these several substances, and the resulting chemical formulæ representing their constitution, are then given.

The concluding section of the paper is occupied by an inquiry into the decoloration of the bodies which exist in archil and in litmus. The latter of these, the author concludes, is reddened by acids, in consequence of their removing the loosely combined ammonia by which the blue colour is produced; and the so-called hydrogen acids liberate the colouring matter by their combining with the alkali to form bodies (either chlorides or iodides), with which the colouring matter has no tendency to unite. Hence it appears that the reddening of litmus is no proof that chloride of hydrogen is an acid, and that the double decomposition which occurs is the same in principle, whether hydrogen or a fixed metal come into play. After detailing the blanching effects of other deoxydizing agents on the colouring matter of litmus, and the action of chlorine on orceine and azolitmine, the author remarks, that in these actions chlorine is subjected to conditions different from those which determine the nature of the results with the generality of organic bodies, and that the displacement of hydrogen, so marked in other cases, does not exist in the class of substances under consideration; but that, in reality, the products of the bleaching energy of chlorine resemble in constitution the compounds of chlorine which possess bleaching powers.

A paper was also read, entitled, "On the Corpuscles of the Blood." By Martin Barry, M.D., F.R.S.

The author in the course of his researches in Embryology, detailed in his "third series," observed that some of the corpuscles of the blood undergo progressive alterations in their structure. The corpuscles so altered he believes to be of the same kind as those described by Professor Owen; and having found that the alterations in question terminate in a separation of the corpuscles into globules, he thinks this fact confirms the idea of Professor Owen—that the blood-disc undergoes spontaneous subdivision. The author farther observed that the corpuscles of the blood, in certain altered states, undergo rapid and incessant changes of form, which cannot be traced

to the action of neighbouring cilia. A corpuscle will sometimes assume the figure of an hour-glass, as if it were preparing to divide itself into two parts, but it instantaneously either regains its previous form, or assumes a new one. These motions are incessant, and so rapid that it is not easy to catch and delineate any of the resulting forms; they are compared to the writhings of an animal in pain. The author has seen them in a rabbit, as late as two hours and a half after death, and thinks it probable that they may continue for a longer time, although, when under the microscope, they gradually and in a short time cease; the rapid changes of form, which are at first apparent, passing into gentle undulations, and being succeeded by an alternation of rest and motion.

Should these facts be thought to confirm the opinion of John Hunter, that the blood "has life within itself," or "acquires it in the act of forming organic bodies," because its corpuscles in certain states exhibit "vital actions," still his assertion that "the red globules" are the least important part of the blood, will appear to have no just foundation.

The author finds that the phenomena attending what is called "vital turgescence" of the blood-vessels, depend not merely on an accumulation and stagnation of blood, but on changes in the condition of its corpuscles, which assume a more or less globular, or elliptical appearance resembling cells. Their interior is dark, from a great increase of red colouring matter which accumulates around a pellucid and colourless point, corresponding in situation to that of the central part of nuclei in other cases; and so completely do the corpuscles fill their vessels, that the fluid portion of the blood is excluded, and the corpuscles are compressed into polyhedral forms. This condition of the blood-corpuscles during vital turgescence of the vessels, the author thinks deserving of consideration, in connexion with many of the phenomena attending local accumulations of blood, both in health and in disease; and more especially with reference to increased pulsation, the exudation of colourless fluid, and the heat and redness of inflamed parts.

According to the views of the author, the formation and nourishment of organs is not effected merely by the fluid portion of the blood, for he has discovered that the cells which he showed in his "Third Series of Researches in Embryology" form the chorion, are altered blood-corpuscles; and he has farther found that muscular fibre (that is, the future muscle-cylinder, not the fibril) is formed by the coalescence of cells, which also are derived from corpuscles of the blood. He has seen and figured every stage of transition, from the unaltered blood-corpuscle to the branched cells forming the chorion, on the one hand, and to the elliptical or oblong muscle-cells, on the other. The colour is not changed, except that the blood-corpuscles, when passing into cells for the formation of muscle, become of a much deeper red. There seems to occur in these an increase of red colouring matter.

Valentin, in describing the mode of the formation of muscle, had stated that globules approach one another and coalesce to form

threads, which in many places have the appearance of a necklace, but subsequently lose the traces of division, and become cylinders. Schwann had conjectured that the globules just referred to—as having been observed by Valentin—are cells, and that these cells coalesce to form a secondary cell, that is, the muscle-cylinder. The author confirms the observations of Valentin and the conjectures of Schwann, with the addition, that the globules coalescing to form the muscle-cylinder are blood-corpuscles which have become cells. The fibrils appear to be subsequently formed within the cylinder, which thus becomes the muscular fasciculus. The medullary portion of the cylinder appears to be composed of the pellucid objects, one of which is contained within each altered blood-corpuscle. Some of these pellucid objects, however, continue to occupy a peripheral situation.

The author thinks it is not probable that muscular fibre and the chorion are the only tissues formed by the corpuscles of the blood; he is disposed rather to inquire, how many are the tissues which they do not form? Nerves, for instance, are known to arise very much in the same manner as muscle-cylinders; and epithelium-cells sometimes present appearances which have almost suggested to the author the idea that they were altered corpuscles of the blood.

Schwann had prevously shown that "for all the elementary parts of organisms there is a common principle of developement,"—the elementary parts of tissues having a like origin in cells, however different the functions of those tissues. The facts made known in the present memoir not only afford evidence of the justness of the views of Schwann, but they farther show that objects, such as the corpuscles of the blood, having all the same appearance, enter immediately into the formation of tissues which physiologically are extremely different. Some of these corpuscles arrange themselves into muscle, and others become metamorphosed into constituent parts of the chorion. But the author thinks it is not more difficult to conceive corpuscles having the same colour, form, and general appearance, undergoing transformations for very different purposes, than to admit the fact made known by two of his preceding memoirs,—namely, that the nucleus of a cell, having a central situation in the group which constitutes the germ, is developed into the whole embryo, while the nuclei of cells occupying less central situations in the group, form no more than a minute portion of the amnion. It is known that in the bee-hive a grub is taken—for a special purpose—from among those born as workers, which it perfectly resembles until nourished with peculiar food, when its developement takes a different course from that of every other individual in the hive.

The Society then adjourned over the Whitsun Recess, to meet again on the 18th instant.

June 18, 1840.

The MARQUIS of NORTHAMPTON, President, in the Chair.

Jean Baptiste Dumas, was elected a Foreign Member of the Society.

Lieutenant-Colonel John George Bonner, E.I.C.S., and John Narrien, Esq., were balloted for, and duly elected into the Society.

The President informed the Meeting that the Council had voted the following Addresses of Congratulation to Her Majesty the Queen, and His Royal Highness Prince Albert, on the occasion of the late traitorous attack made upon their lives.

"*To the Queen's Most Excellent Majesty.*

"The humble Address of the President, Council, and Fellows of the Royal Society of London for improving Natural Knowledge.

"Most Gracious Sovereign,

"We, Your Majesty's subjects, the President, Council, and Fellows of the Royal Society of London for improving Natural Knowledge, deeply penetrated with feelings of indignation and abhorrence at the treasonable and atrocious attack lately made on Your Majesty's sacred person, beg leave to approach your Throne, and to offer our heartfelt congratulations on Your Majesty's providential escape from the wicked designs of an assassin.

"We lift up our hearts in joyful thankfulness to the Almighty Disposer of Events for his merciful protection of a life so dear to all Your Majesty's subjects, and so important to the welfare and prosperity of these realms; and we most earnestly pray that the same Providence, so signally manifested on the late event, may continue to shield Your Majesty from every danger; and that during a long, prosperous and happy reign, Your Majesty may live in the enjoyment of the affection and prayers of a grateful and united people."

"*To His Royal Highness Prince Albert of Saxe-Coburg and Gotha.*

"The humble Address of the President, Council, and Fellows of the Royal Society of London for improving Natural Knowledge.

"May it please Your Royal Highness,

"We, the President, Council, and Fellows of the Royal Society of London for improving Natural Knowledge, approach your Royal Highness with the expression of our heartfelt gratitude to the Almighty Disposer of Events for the protection of Her Majesty and Your Royal Highness from the traitorous attack of an assassin, and to offer our sincere congratulations for the safety of a life so important to the welfare of this great empire, as well as to the happiness of our beloved Sovereign.

"In offering these our sentiments, we cannot forget that Your Royal Highness, by becoming one of our members, has proclaimed to the world Your Royal Highness's attachment to those sciences

for the advancement of which our Society was established, and which tend at the same time to the glory of the nation that protects them, and to the happiness of the whole civilized world."

These Addresses were unanimously adopted by the Society.

The following letter was read from G. G. Anson, Esq., addressed to the President, enclosing a specimen of a deposit with which nine acres of land near Exeter, belonging to Lord Radnor, had been covered after the subsidence of a flood, and which was sent by H.R.H. Prince Albert, F.R.S. :—

"*Buckingham Palace, June* 8, 1840.

"My dear Lord,

"His Royal Highness Prince Albert has commanded me to forward to you the enclosed specimen, which has been sent up to His Royal Highness from Lord Radnor's place near Exeter, where nine acres of land were covered with this curious substance after a flood had subsided. His Royal Highness thinks it very probable that the subject may already have been brought before the Royal Society, but in case it should not have been, he sends the accompanying packet. It is said that a good deal of it has been applied to the purpose of making waistcoats for poor people.

"Believe me,

"My dear Lord,

"Yours very faithfully,

"G. G. Anson.

"*The Marquis of Northampton, President of the Royal Society.*"

The following description of the specimen referred to in the letter, drawn up by John Lindley, Ph. D. F.R.S., was also read:

"Description of the Specimen referred to in the preceding letter." By John Lindley, Ph. D., F.R.S.

The plant which overran Lord Radnor's land is the *Conferva crispa* of Dillwyn, which is said to be the *Conferva fluviatilis* of Linnæus. The species inhabits fresh water, and multiplies with great rapidity, forming entangled strata. The green portion is the Conferva in its young state, the white portion is the plant old and bleached. The whole mass consists of articulated filaments, among which are fragments of grass-leaves.

The following papers were then read, or their titles announced :—

1. An Account of Experiments on the Reflecting Telescope. By the Right Hon. Lord Oxmantown, F.R.S.

This paper enters minutely into the details of the experiments, of the precautions requisite to ensure success, and of the manipulations ultimately adopted in forming a speculum three feet in diameter, subsequently applied to a telescope, mounted in a manner very similar to that of Sir John Herschel. The author states, as the results he arrived at, that specula can be made to act effectively, when cast of the finest speculum metal, in separate portions, and retained in